RAC V

RESPONSE ACTION CONTRACT FOR

Remedial, Enforcement Oversight, and
Non-Time Critical Removal Activities at Sites of Release
or Threatened Release of Hazardous Substances in Region V

REVISED BASIS OF DESIGN REPORT WILDCAT AND KOKOMO CREEKS (OU3) CONTINENTAL STEEL SUPERFUND SITE

Kokomo, Indiana
Remedial Design
WA No. 222-RDRD-05BW/Contract No. 68-W6-0025
January 2006

PREPARED FOR

U.S. Environmental Protection Agency

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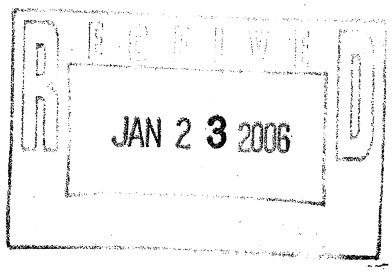

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Abbreviations and Acronyms

ARAR	applicable or relevant and appropriate requirements
BOD	Basis of Design
CAA	Clean Air Act
CAMU	Corrective Action Management Unit
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CFR	Code of Federal Regulations
COC	contaminant of concern
CQAP	Construction Quality Assurance Plan
CSSS	Continental Steel Superfund Site
CWA	Clean Water Act
FML	flexible membrane liner
GAC	granular activated carbon
HSWA	Hazardous and Solid Waste Amendments of 1984
HZE	Hub-Zone Enterprise
IAC	Indiana Administrative Code
IDEM	Indiana Department of Environmental Management
LDR	Land Disposal Restriction
mg/L	milligram(s) per liter
mg/m^3	milligram(s) per cubic meter
NCP	National Contingency Plan
NPDES	National Pollutant Discharge Elimination System
NOI	Notice of Intent
O&M	operations and maintenance
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
PAH	polyaromatic hydrocarbon
PCB	polychlorinated biphenyl
POTW	publicly owned treatment works
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act of 1976
RD/RA	Remedial Design/Remedial Action
RI/FS	Remedial Investigation and Feasibility Study
RISC	Risk Integrated System of Closure
ROD	Record of Decision

AP	Sampling and Analysis Plan
ARA	Superfund Amendments and Reauthorization Act of 1986
BE	Small Business Enterprise
DBE	Small Disadvantaged Business Enterprise
DWA	Safe Drinking Water Act
MP	site management plan
OW	Statement of Work
TART	Superfund Technical Assistance Response Team
VOC	semivolatile organic compound
WAC	surface weighted average concentration
BC	to be considered
CL	target compound list
CLP	toxicity characteristic leaching procedure
SCA	Toxic Substances Control Act
SS	total suspended solids
JCL	upper confidence limit
JSACE	U.S. Army Corps of Engineers
JSC	United States Code
JSEPA	United States Environmental Protection Agency
JTS	Universal Treatment Standard
/OC	volatile organic compound
/OB	Women Owned Business
/WTP	wastewater treatment plant
/d^3	cubic yard

Introduction

This Basis of Design (BOD) Report for the Wildcat and Kokomo Creeks (OU3) located next to the Continental Steel Superfund Site (CSSS) has been prepared for the United States Environmental Protection Agency (USEPA) by CH2M HILL under Contract No. 68-W6-0025 in accordance with the Statement of Work (SOW) in the Record of Decision[1] (ROD) issued in September 1998, and the Remedial Design/Remedial Action (RD/RA) Handbook issued in June 1995[2]. This BOD Report is divided into the following sections:

- Introduction
- Project Delivery Strategy
- Design Approach, Assumptions, and Parameters
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)
- Construction Schedule
- Cost Estimate
- Biddability, Constructibility, and Operability Review
- Tables
- Figures
- Appendixes

The attachments included in this BOD Report provide supplemental information integral to the design of the selected remedy. These attachments consist of the following:

- Appendix A: Ecological and Hydrological Investigation Documentation—Technical memorandums discussing the ecological and hydrological investigations conducted as part of the predesign investigation.
- Appendix B: Creek Sediment Evaluation Documentation—Technical memorandum summarizing the creek sediment data evaluation and surfaced weighted average approach used to determine areas of sediment to be removed from the creek.
- Appendix C: Dredge Information—Vendor information regarding the amphibious dredge system.
- Appendix D: M-CACES Cost Estimate—A cost estimate within an accuracy of plus 15 to minus 5 percent in M-CACES format.

Appendixes A and B are quite voluminous and have not changed since the February 2004 version of the Wildcat and Kokomo Creeks Basis of Design; therefore, they are not being reissued with this document.

The design specifications and drawings, which accompany this report, have been included as separate submittals. A Draft Construction Quality Assurance Plan (CQAP) and Draft

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[1] USEPA/IDEM. *Record of Decision: Continental Steel Corporation Superfund Site.* Kokomo, Howard County, Indiana. September 1998.

[2] USEPA: *Remedial Design/Remedial Action Handbook (EPA 540/R-95/059).* June 1995.

Operations and Maintenance (O&M) Manual will be submitted at a later date. The separate lesign specification and drawing submittal includes separate drawings not cited in this eport.

Site History

A detailed description of the history of Continental Steel can be found in the Remedial nvestigation and Feasibility Study (RI/FS) and the ROD. Throughout its history, the facility roduced nails, wire, and wire fence from scrap metal. Operations included reheating, asting, rolling, drawing, pickling, annealing, hot-dip galvanizing, tinning, and oil empering. The steel manufacturing operations included the use, handling, storage, and lisposal of hazardous materials. For purposes of the RI/FS and the RD/RA, the site was livided into six operable units (OUs). The six OUs include the following:

OU1—Sitewide Groundwater
OU2—Lagoon Area
OU3—Kokomo and Wildcat Creeks
OU4—Markland Avenue Quarry
OU5—Main Plant
OU6—Slag Processing Area

Site Description

The CSSS is an uncontrolled hazardous waste site in Kokomo, Indiana. The Indiana Department of Environmental Management (IDEM) was the lead agency responsible for onducting the RI/FS at the site under a cooperative agreement with USEPA, in accordance vith the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 CERCLA), commonly known as Superfund.

The CSSS is located on West Markland Avenue in the City of Kokomo, Township 23 North, Range 3 East, and Township 24 North, Range 3 East, of Howard County, Indiana (Figure 1). The site encompasses 183 acres and consists of an abandoned steel manufacturing facility Main Plant), pickle liquor treatment lagoons (Lagoon Area), a former waste disposal area Markland Avenue Quarry), and a former waste disposal and slag processing area (Slag Processing Area). The site is located within a mixed residential, commercial, and industrial rea zoned mainly for general use. Residential properties lie predominantly east and outheast of the site, mixed residential and industrial areas lie to the north and west, and ndustrial properties are located to the south. The residences closest to the plant are within 00 feet east of the site, near the property fence line along South Leeds Street, and south of he Main Plant across Kokomo Creek. Highland Park, a public recreation area for local esidents, lies south of the Main Plant just across Kokomo Creek and immediately adjacent o the CSSS property south of Kokomo Creek.

Wildcat and Kokomo Creeks (Figure 2) extend about 20,000 feet through the CSSS. The reeks have been impacted by the direct discharge of material, runoff from the source areas, nd upstream industrial sources. The creeks are generally 50 to 100 feet wide and 0 to 4 feet leep, and are designated for recreational use. A recreational corridor extends along the

majority of the creeks' banks. Wildcat and Kokomo Creeks run along the borders of the Main Plant, the Lagoon Area, and the Slag Processing Area. They have received water from the plant's wastewater recycling, treatment, and filtration system; neutralized pickle liquor from the Lagoon Area; discharge from site outfalls; and storm water runoff from the site in general.

Wildcat and Kokomo creeks are part of the Upper Wabash River basin. Wildcat Creek merges with the Wabash River in Lafayette, Indiana, nearly 45 miles west of Kokomo. The nearest upgradient public drinking water well is nearly 5 miles from the site, and the nearest downgradient public drinking water well—nearly 15 miles from of the site—is likely too far south to be considered within the regional groundwater flow path. The nearest surface water extraction point for a public drinking water supply is located greater than 8 miles upstream and 40 miles downstream from the site.

Selected Remedy—Wildcat and Kokomo Creeks (OU3)

Record of Decision

The purpose of USEPA's ROD was to select the final remedial action for the CSSS. The final remedy will control the sources of contamination and prevent the further migration of contaminants. The selected remedy for Wildcat and Kokomo Creeks is to excavate contaminated creek sediment and consolidate the sediment onsite (e.g., placement in the Corrective Action Management Unit [CAMU]).

Description of the ROD-Selected Remedial Action

According to the ROD, the RA involves the removal of contaminated sediment from the stream reaches shown on Figure 2. The material removed will be stabilized or solidified, if necessary, and placed in the onsite CAMU.

As the intent of the ROD-selected remedy is to remove the contaminated sediment from the creeks, no future sampling of surface water or sediment, excluding verification sampling after dredging and excavation, will be required. There will be no future use restrictions on the creeks, and it is anticipated that negative future impacts to the aquatic habitat from contamination will be negligible[3].

CH2M HILL Remedial Design/Remedial Action Implementation Strategy

In 2000, CH2M HILL reviewed the proposed RA activities at the six OUs and formulated an RA strategy that, in general, segregates similar types of activities proposed for the various OUs and combines them into manageable contracts.[4] These contracts are as follows:

- Contract 1—Lagoon Solids Excavation and Consolidation

[3] USEPA/IDEM. *Record of Decision: Continental Steel Corporation Superfund Site.* Kokomo, Howard County, Indiana. September, 1998. Page 106.

[4] CH2M HILL. *Technical Assistance Document—RD/RA Implementation Strategy: Continental Steel Corporation Superfund Site.* September 19, 2000.

Contract 2—Kokomo and Wildcat Creeks Sediment Removal
Contract 3—Markland Avenue Quarry Sediment Excavation
Contract 4—Backfill and Capping/Covers
Contract 5—Groundwater

The Kokomo and Wildcat Creeks Sediment Removal RA (Contract 2) will be implemented by USEPA.

Contract 2—Kokomo and Wildcat Creeks Sediment Removal

As described in the Technical Assistance Document[5], contaminated sediment throughout the various creek reaches will be removed, managed, solidified, or stabilized—if necessary—and placed within the CAMU. A creek bypass and conventional earthmoving equipment for dry excavation is the preferred sediment removal method for Kokomo and Wildcat Creeks.

Conventional wide-tracked earthmoving equipment should be able to excavate the sediment quite readily from the creeks based on sediment probe testing. Some of the sediment to be removed is sand and gravel, and it has adequate bearing strength to support equipment wheel loads. In areas where the sediment is soft, the underlying materials are more competent (e.g., bedrock), and no severe impact to equipment operation is anticipated.

After the sediment is excavated from the creeks, the fine-grained sediment and organics will likely be saturated and soft. The coarse-grained material will be gravity dewatered. It may be necessary to dewater the fine-grained sediment or improve the compressive strength of the sediment through solidification. Once the characteristics of the material are deemed suitable, based on Resource Conservation and Recovery Act (RCRA) liquid restriction requirements and compressive strength testing, the material will be placed in the CAMU.

Preliminary Design Investigation Activities

Biota Characterization of Wildcat and Kokomo Creeks

A biological field investigation was conducted on Wildcat, Kokomo, and Little Deer Creeks between June 11 and 18, 2001. The purpose of the investigation was to provide baseline biological and habitat quality information in support of the remediation of contaminated sediments in Wildcat and Kokomo Creeks near the CSSS. Two technical memorandums were prepared to document the biota characterization activities and results. These documents are included in Appendix A as Attachments A-1 and A-2.

The following conclusions were developed from the biota characterization activities. Details supporting the conclusions can be found in Attachment A-2.

- General water quality parameters were within acceptable standards for the protection of aquatic life.

[5] CH2M HILL. *Technical Assistance Document—RD/RA Implementation Strategy: Continental Steel Corporation Superfund Site*. September 19, 2000.

- Habitat quality, as assessed by the qualitative habitat evaluation index (QHEI), was generally supportive of the designated aquatic life use in most Wildcat Creek study reaches. Two reaches that were only partially supporting due to the impounding of the creek by a low head dam, a straight channel, a reduced riparian zone, and bank erosion.
- Removal of the dam, implementation of bank stabilization, increases in riparian zone width, and the establishment of instream riffle/pool complexes in these reaches will improve habitat quality.
- Habitat quality in the Kokomo Creek study reach did not support designated aquatic life use. Poor substrate, a highly incised channel, extensive bank erosion, a lack of a riffle/pool system, and a poor riparian zone contributed to the non-support assessment. Extensive stream restoration will be needed to improve habitat quality in this stream reach.
- The benthic community assessment indicated some impairment in community structure throughout the study area, but not enough to reduce the aquatic life use from full support, except for the Wildcat Creek background site.
- Comparison of benthic macroinvertebrate data with IDEM data collected over several years also indicated partial support at the same stream reach below the Kokomo Reservoir.
- A comparison of benthic data with a previous Kokomo Creek study also indicated a slight impairment.
- The fish community assessment for all study reaches indicated full support of the designated aquatic life use.
- Both invertebrate (crayfish) and vertebrate (fish) tissue contained high levels of polychlorinated biphenyls (PCBs) within the study reaches adjacent to CSSS.

Predesign Field Investigation Activities

Predesign field investigation activities were performed in June 2001 to gather additional data to be used during the preliminary design. These activities included the following:

- Sediment dewatering sample collection and testing
- Physical delineation sediment cross sections
- Background sediment sample collection

Sediment dewatering samples were collected and tested for dewatering characteristics using coarse mesh geotextile tube material. Some of the gravity-drained water was collected and analyzed for volatile organic compounds (VOCs), PCBs, polynuclear aromatic hydrocarbons (PAHs), and metals. The procedures used for the sediment dewatering investigation and the data collected are included as Attachment B-1a of the sediment evaluation document[6] (Appendix B, Attachment B-1), which is discussed in the following section. The analytical results for the gravity-drained water collected and analyzed are included as Attachment B-2 to Appendix B.

[6] CH2M HILL. *Evaluation of Sediments in Wildcat and Kokomo Creeks: Continental Steel Superfund Site*. March, 2002.

Key conclusions of the predesign field investigation activities related to dewatering include:

- The sediment readily dewaters when placed in the geotextile tubes.
- Gravity-drained water may need pretreatment to comply with Kokomo Publicly Owned Treatment Works (POTW) pretreatment standards or site specific National Pollutant Discharge Elimination System (NPDES) standards.

Sediment Evaluation Study

During the fall of 2001, USEPA instructed CH2M HILL to reevaluate the volume of sediment requiring removal using a surface weighted average concentration (SWAC) approach. The physical delineation sediment cross section data, associated analytical results, and background sediment data collected during the predesign field investigation were evaluated as part of a sediment evaluation study (Appendix B, Attachment B-1). Table 1 presents a summary of the estimated SWACs for individual creek reaches and the entire creek under different potential removal actions. A discussion regarding the calculation of these values and the associated data analyses are contained in Attachment B-1 to this report.

On February 13, 2002, representatives from USEPA, IDEM, and CH2M HILL met to discuss the evaluation. USEPA and IDEM selected the fourth alternative shown on Table 1, which consists of removing sediments with PCB concentrations exceeding three times the remedial goal (e.g., 3,000 microgram[s] per kilogram[s] [µg/kg]) and PAH concentrations greater than five times the remedial goal. Additional sediment removal within Reach 2 was agreed upon in order to achieve the remedial goal within all reaches (Figure 3).

As shown in Table 1, the post-remediation SWAC representing PCB concentrations in the entire creek was calculated to be 353 µg/kg. Under this scenario, approximately 9,500 cubic yards (yd^3) of sediment will be removed instead of the estimated 61,000 yd^3 presented in the ROD.

2006 Revised Proposed Remedial Action

The proposed RA presented in the Basis of Design Report[7] is being further revised based on additional design research CH2M HILL has conducted into sediment removal technologies and cost estimate comparisons between removal technologies. The proposed RA described in this document differs from the previous design (February 2004) in that remediation areas that contain coarse, cobble rich sediments will be wet excavated with a mechanical dredge and dewatered on the constructed dewatering pad. Soft sediments will be hydraulically dredged and pumped into geotextile tubes placed on the dewatering pad for dewatering. A creek bypass system will not be used to pump water around the sediment excavation areas. Dewatered sediment will be disposed of at an approved offsite facility.

CH2M HILL is proposing to start the creek remediation in June 2006. The creek remediation will begin with the removal of sediments in Reaches 4, 5, and 6. These reaches will be protected from recontamination during the sediment removal in the other reaches because they are upstream of the confluence of Wildcat and Kokomo Creeks. Reach 4 will include the excavation of about the

CH2M HILL. *Wildcat and Kokomo Creeks (OU3) Basis of Design Report: Continental Steel Superfund Site.* February 2004.

top 2 feet of lead-contaminated soils within 5 feet of the creek bank on the Main Plant site along Kokomo Creek. The dredging of the remaining reaches (Reaches 1 - 3), and the bank stabilization in the Slag Processing Area along Wildcat Creek will be performed after the sediment removal is complete in Reaches 4, 5, and 6.

Contaminated sediment throughout the various creek reaches will be removed, managed, solidified, or stabilized—if necessary—and disposed of at a licensed offsite facility. Use of an amphibious hydraulic dredge for soft creek sediments, wet excavation of coarse, cobble rich sediments with a mechanical dredge, and dry excavation of any bank soils requiring removal is the preferred removal method for Kokomo and Wildcat Creeks. If bedrock is encountered during the removal and it impedes progress, hydraulic jetting may be used to wash the sediments to a location where they can be excavated more readily.

Wide-tracked earthmoving equipment should be able to traverse the creeks based on sediment probe testing. Some of the sediment to be removed is sand and gravel, and it has adequate bearing strength to support equipment wheel loads. In areas where the sediment is soft, the underlying materials are more competent (e.g., bedrock), and no severe impact to equipment operation is anticipated.

Hydraulically dredged sediments will be pumped to geotextile tubes in the dewatering pad located in the Lagoon Area. After the sediments have been dewatered, the geotextile tubes will be opened, and the solidified sediments will be placed on trucks for disposal at an offsite facility. Coarse, cobble rich sediments which are wet excavated with a mechanical dredge will be placed on geotextile in a portion of the dewatering pad. After the sediments have been dewatered, they will be placed on trucks for disposal at an appropriate offsite facility. Carriage water will be treated prior to being pumped directly back into Wildcat Creek. Soils which are excavated from the bank soils will be disposed of at an appropriate offsite facility.

The details of the design are described in the following section under the following components of the remedy:

- Preconstruction sediment and soils investigation
- Preconstruction sediment treatability testing
- Site preparation
- Sediment removal and creek bank soil excavation in Reaches 4 - 6
- Sediment removal and creek bank soil excavation in Reaches 1 - 3
- Creek restoration
- 5-year site reviews

Project Delivery Strategy

This section presents the project delivery strategy for the Wildcat and Kokomo Creeks Sediment Removal RA. The contracting strategy and primary components of the RA are summarized below. Key project delivery strategies, relative to a specific RA component, are noted below in their respective sections.

Contracting Strategy

The contract documents for the Wildcat and Kokomo Creeks RA (OU3) are being prepared based on the understanding that the USEPA is the Owner and CH2M HILL is the Contractor. CH2M HILL will prepare the specifications and drawings and will provide the bidding process instructions and contract terms.

CH2M HILL proposes to competitively bid the subcontract through an invitation-only process that will include Small Business Enterprises (SBE), Small Disadvantaged Business Enterprises (SDBE), Women-Owned Businesses (WOB), Hub-Zone Enterprises (HZE), and Veteran's Preference Businesses to the greatest extent possible.

Final Design

Detailed design drawings and specifications are provided for the RA components. The draft CQAP and draft O&M Manual will be submitted separately.

The final design package will consist of the following:

- Basis of Design Report, which will include a cost estimate and the biddability, operability, and constructibility reviews.
- Specifications and Drawings.
- Construction Quality Assurance Plan.
- Operations and Maintenance Manual.

Detailed design drawings and specifications have been prepared for the RA components. However, most of the construction methods chosen and the selection of some of the materials to be used will be based on performance specifications. Performance specifications will allow the subcontractor flexibility during implementation while ensuring conformance with the specification requirements.

Remedial Action—Wildcat and Kokomo Creeks (OU3)

Descriptions of the primary components of the RA are presented below in their expected construction sequence. The design details and construction methods for each of these components are presented in the following section.

The Wildcat and Kokomo Creeks Sediment Removal RA will be executed by USEPA and CH2M HILL. The primary components of the RA, as discussed in the preceding sections, are presented below in their expected construction sequence. Key project delivery strategies, relative to a specific RA component, are noted below in each respective section.

- **Preconstruction Sediment and Soils Investigation**—Prior to construction activities, CH2M HILL will conduct a sediment and creek bank soils investigation within the targeted sediment removal areas shown in Figure 3 and in the design drawings. The purpose of the investigation is to better delineate the areal extent of the contaminated sediment and creek bank soil associated with a targeted polygon area. This is recommended as a result of a 100-year flood event on the creek that occurred since the last sampling effort.

- **Preconstruction Sediment Treatability Testing**—Treatability testing using a geotextile tube hanging bag test will evaluate whether geotextile tubes will dewater a wide range of sediments within a reasonable time. Testing will be performed to evaluate whether conditioned sediment dewaters more quickly and effectively than sediments direct from the dredge.

- **Site Preparation**—Select clearing and grubbing of vegetated areas will be completed along the creek banks. Efforts will be made to minimize impacts to existing vegetation. Other tasks to be completed include trailer set-up, utility connections, temporary fencing, decontamination pad set up, and temporary gravel paving.

  In order to minimize further erosional effects to the site due to existing conditions and/or scheduled construction activities, erosion control measures will be implemented immediately following mobilization of the subcontractor and prior to any additional site disturbance.

- **Sediment Removal**—Sediment hot spots in Reaches 4 - 6 will be removed first. These reaches will be protected from recontamination because they are upstream of the confluence of Wildcat and Kokomo Creeks. Reach 4 will also include the excavation of about the top 2 feet of lead-contaminated soils within 5 feet of the creek bank on the Main Plant site along Kokomo Creek. Impacted soils located along Kokomo Creek and the Main Plant Area border beyond 5 feet from the streambank will be addressed as part of the Main Plant Remedial Action. After the remediation of Reaches 4 - 6 is completed, dredging of the remaining reaches (Reaches 1 - 3), and the bank stabilization in the Slag Processing Area along Wildcat Creek will proceed.

- **Creek Restoration**—Following the sediment removal in each target area, impacted stream reaches will be restored to a stabilized streambank using bioengineering techniques. The streambanks will be restored once the sediments have been removed (as soon as it is practical to do so) to minimize the duration of streambank vulnerability to erosion. Creek restoration performance will be evaluated by visual observation on an annual basis for 5 years. Any necessary repairs will be addressed annually during the first 5 years.

- **5-Year Site Reviews**—During the 5-year site review, the creek restoration performance will be evaluated and the inspection frequency modified, if necessary. Ongoing sampling of creek surface water and sediment is not included in the ROD because all contaminated sediment above criteria will be removed. As a result, the 5-year review will evaluate

data collected under the monitoring programs for the Main Plant, the Lagoon Area, and the Groundwater OUs. The intent of the review is to determine whether there is a potential for the creek sediments to have become recontaminated by erosion or from discharges of contaminated groundwater. If there is a substantial potential for recontamination, surface water and sediment monitoring will be considered.

Design Approach, Assumptions, and Parameters

This section presents the technical details of the Wildcat and Kokomo Creeks Sediment Removal RA design. Methods of construction for each component of the RA are described in this section, as are performance standards that must be met during construction. As described previously, the components of the Wildcat and Kokomo Creeks Sediment Removal (OU3) RA consist of the following, presented in their expected project delivery sequence:

- Preconstruction sediment and soils investigation
- Preconstruction sediment treatability testing
- Site preparation
- Sediment removal and creek bank soil excavation in Reaches 4 – 6
- Sediment removal and creek bank soil excavation in Reaches 1 – 3
- Creek restoration
- 5-year site reviews

Preconstruction Sediment and Soils Investigation

Description of Preconstruction Sediment and Soils Investigation

Prior to construction activities, CH2M HILL will conduct a sediment and soils investigation within the targeted polygon areas. The purpose of the investigation is to better delineate the areal extent of the contaminated sediment and creek bank soil associated with a targeted polygon area. A sampling plan will be developed to address both preconstruction and verification sampling.

Areas Requiring Preconstruction Sediment and Soils Investigation

The target sediment removal areas shown on Figure 3 and in the design drawings will be investigated.

Construction Details Including Design and Construction Technical Factors

Initially, samples along the centerline of the target sediment removal areas may be collected at the middle, upstream and downstream boundaries of each target area and along the banks on both sides of the creeks. The exact number of samples to be collected will depend on the size of the target area.

The samples will be analyzed for PAHs, PCBs, arsenic, and beryllium. Testing will be conducted in a mobile laboratory provided by the USEPA so results can be obtained quickly and compared to the final remedial goals listed in Table 1. If necessary, additional samples will be collected to further define the sediment target area. The contract laboratory program (CLP) is proposed as an alternate means of analysis if the mobile laboratory is unreliable.

Preconstruction Sediment Treatability Testing

Description of Sediment Treatability Testing

Bench testing will be performed on sediment samples to assess sediment dewatering and dewatered solids characteristics and the requirements for carriage water treatment. The basic approach to bench testing is to collect representative bulk samples and perform bench-scale testing for the following sediment properties and dewatering processes:

- Sediment and solids characterization
- Sand separation
- Jar and settling tests for sediment thickening
- Geotextile tube dewatering
- Carriage water treatment

Testing will be performed on representative sediments from different locations, varying in the depositional environments and soils classifications. The intent of selecting multiple locations is to help bracket the range of potential operating conditions.

Areas Requiring Preconstruction Sediment and Soils Investigation

The target sediment areas are shown on Figure 3 and in the design drawings. The sampling associated with the treatability study involves collecting sufficient volumes of sediment samples for analysis and treatability testing activities associated with the sediments sub-areas selected above.

Construction Details Including Design and Construction Technical Factors

Samples taken at several locations in each sub-area will be combined into a single composite sample. Each composite sample will be diluted with river water to simulate the dredge slurry of a hydraulic dredge. The simulated dredge slurry is expected to be approximately 8 percent solids by weight. Depending on the type of sediment pumped by the hydraulic dredge, the solids concentration in the dredge slurry can vary significantly. However, the assumed 8 percent solids by weight represent a possible average based upon a reasonable range of normal operating values of between 5 to 12 percent.

Sediment core samples will be collected using manual sediment coring methods. Cores collected for treatability work will be processed using standard techniques. The number of sediment cores samples per sub-area will be determined based upon volume of sediment required to perform the treatability tests.

Multiple core samples will be composited and river water added to create a simulated dredge slurry of approximately 8 percent solids by weight. A single slurry sample will be generated for each sub-area so that all the testing can be performed on the same sample to avoid problems with changed influent conditions.

Typically, sediment dewatering characteristics in geotextile tubes are first tested in a bench-scale test in accordance with a proposed American Society for Testing and Materials (ASTM) test, commonly called the hanging bag test.

For initial sizing and testing of geotextile tubes, the following key criteria of the sediment must be established:

- Type of sediment
- Volume of sediment
- Density of sediment
- Specific gravity of sediment solids
- Bulking or dilution factor in dredge slurry pipe
- Percent solids in slurry
- Target percent solids after dewatering

When these factors are known, the hanging bag test can be initiated.

The specific concerns and issues of applying geotextile tubes for dewatering of sediment include the following:

- Flow rate through bag
- Quality of filtrate water
- Volume of and weight of solids collected
- Sediment shrinkage
- Dewatering efficiency over time

The allowable flow rate of the slurry into the bag will determine the material weave to be used and the number of bags needed while dredging at specific rates. The quality of filtrate water is crucial in determining the effectiveness of the geotextile bag system for retaining PCBs and sediment. Measuring the volume and percent solids over time will develop the data necessary for a preliminary design.

Site Preparation

Description of Site Preparation

Prior to dredging and creek bank excavation, the subcontractor will perform site preparation activities. These activities are necessary to allow heavy equipment to access all of the portions of the site that will be involved in this RA. Site preparation activities will include such tasks as:

- Limited clearing and grubbing of vegetation
- Establishing physical construction limits at the site
- Identifying dredging and excavation areas
- Constructing river access points
- Implementing erosion control measures for construction activities
- Installation of upstream controls, consisting of buoys, warning signs, and a warning buoy line

)ther tasks to be completed include trailer set-up, utility connections, temporary fencing, ınd temporary gravel paving.

⅄reas Requiring Site Preparation

ɔite preparation activities will occur along the creek banks where dredging and excavation ıre expected to take place. Sedimentation controls will be installed downstream to reduce ;ediment loading to the creeks during these activities.

ɔonstruction Details Including Design and Construction Technical Factors

n preparation for construction activities, the placement of all required erosion controls e.g., straw bales, silt fencing, etc.) will be completed before work around and in the creeks s started. Wetlands delineated in the Application for Water Quality Certification will be ɔrotected. Once erosion control measures are in place, remaining site preparation activities ⅴill commence. Construction erosion control measures will follow standard erosion and ;ediment control best management practices and will be based on USEPA guidance[8].

⅄pproval to perform work in a floodplain will be obtained and a Notice of Intent form for :onstruction site activities will be sent to IDEM prior to the start of construction. A site nanagement plan will be developed to address construction erosion and sediment control ɔractices at the site. The plan will include instructions for evaluating the effectiveness of mplemented erosion control measures and for implementing contingency measures, if 'equired, to address observed erosion effects.

ɔtandard erosion control measures, such as silt fencing, will be located along the banks of he creek. As the construction erosion control practices are implemented, they will be ⁄isually evaluated for effectiveness on a regular basis and adjusted as appropriate to limit he erosion potential at the site.

ɔediment and Creek Bank Soil Removal

)escription of Sediment and Creek Bank Soil Removal

ɔediment and Creek Bank Soil Removal

ɔediment removal in Reaches 4, 5, and 6 will be conducted during the first season, starting ıt the furthest upstream location in Reach 6 and proceeding downstream. These reaches will ɔe protected from recontamination during the second RA construction season because they ıre upstream of the confluence of Wildcat and Kokomo Creeks. If the remediation of ⅋eaches 4, 5, and 6 is completed ahead of schedule, CH2M HILL will consult with the JSEPA and IDEM to discuss remediating additional reaches, if the work can be completed ⅴithin the period of performance. The schedule for the dredging of the remaining reaches Reaches 1 through 3), and the bank stabilization in the Slag Processing Area along Wildcat ɔreek will be coordinated with USEPA and IDEM and may occur in the later part of 2006 or nay be scheduled for 2007.

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[8] USEPA. *Summary Guidance Stormwater Management for Construction Activities: Developing Pollution Prevention Plans and ɔest Management Practices.* 1992.

Soft sediment in all reaches will be removed using an amphibious hydraulic dredge and dewatered with geotextile tubes. Coarse, cobble rich sediments will be wet excavated with a mechanical dredge and placed on geotextile in the dewatering pad. Creek bank soils will be excavated with conventional earthmoving equipment.

Prior to dredging or excavation, additional sediment or soil samples will be collected around the target areas to further define the aerial extent of the contamination. A USEPA-supplied mobile laboratory will be used for analysis of the samples. A sampling plan will be developed to address both preconstruction and verification sampling.

The amphibious dredge travels over land and shallow water through the use of bolt-on tires or a Marsh Buggy®. A cutter head or suction dredge on an articulated pipe extending from the front of the dredge head is moved over the area of contaminated sediment, making adjacent overlapping passes. Sediments are pumped from the cutter head in a slurry form through a flexible pipeline directly to geotextile tubes in the dewatering pad, using booster pumps, if necessary.

Following the removal of the sediment and soil to the extents specified and shown on drawings, confirmation samples will be collected from the streambed or bank and analyzed to determine if additional removal is necessary. A USEPA-supplied mobile laboratory will be used for analysis of these confirmation samples. The CLP is proposed as an alternate means of analysis if the mobile laboratory is unreliable.

The removal of the low-head dam located in Reach 5 is not included in the scope of work for this contract.

Description of Dewatering System

The sediment dewatering system will consist of chemical addition, geotextile tubes, and the dewatering pad (designed and constructed separately in the Lagoon Area). Figure 4 shows the process flow diagram.

Sediment will be dredged from the creeks and pumped into the geotextile tubes. The flow rate from the dredge will be continuously monitored. Chemicals will be added to the sediment slurry prior to discharging into the geotextile tubes based on the slurry flow rate and solids content and characteristics. Selection of chemical additives for the water treatment system will include consideration for the likelihood that the additive will clog, gum, bind with, or plug downstream units. Permeate from the geotextile tubes will percolate through the dewatering pad and flow to the carriage water sump before being pumped to the water treatment system.

Geotextile tubes are 60 to 80 feet in circumference and up to several hundred feet in length. They are fabricated to the specific site requirements. The geotextile fabric can be woven from polyester or polypropylene.

Geotextile tubes are initially filled with dredge slurry to not more than 80 percent height and water is allowed to drain through the fabric. After drainage and consolidation, the geotextile tube is again filled and allowed to drain. After a final fill, the tube is allowed to sit and compact to its final volume and dryness. The time it takes for filling and compaction to the target percent solids is crucial for this project. A large system will need to be set up in which some tubes will be in one of the following phases:

Filling Phase
Final Compaction Phase
Sediment Removal Phase

Together, the above phases can be called a dewatering cycle. To use geotextile tubes for ediment removal, the cycle time for a tube is important. The dewatering cycle time is the ime it takes the above phases to be completed. The length of time of a tube cycle and the roduction rate of the dredge will determine the area necessary for the tube lay down area.

The dewatering pad (Figure 5) is a lined, gravel bed area surrounded by lined, earthen erms to provide storage for the carriage water, precipitation, and capture of a geotextile ube's contents in case it ruptures. The gravel thickness will be a minimum of 2 feet; owever, the gravel bed thickness may be greater in certain areas. The minimum gravel bed hickness is based on the amount of gravel required to allow truck traffic on the dewatering ad surface while protecting the geomembrane.

The dewatering pad liner will be sloped at 0.5 percent towards the south, where a main ollection trench will be constructed. No piping is proposed outside the main collection rench. Water will flow through the gravel down to the flexible membrane liner (FML) and long the FML surface to the collection trench. The main collection trench will contain a erforated pipe to collect and transport water to the carriage water sump. Access will be rovided for cleaning the pipe.

Water from the dewatering pad main trench will empty into the carriage water sump, which vill be a depressed area within the dewatering pad that has a perforated tank to provide a ettling area for larger, faster-settling particles. Water from the sump will be pumped to the vater treatment system.

The FML (Figure 6) consists of two geomembrane liners placed between an upper and lower eotextile fabric. The geotextile fabric provides cushioning from the gravel bed and prevents he FML from being punctured.

Description of Water Treatment System

Water from the carriage water sump will be pumped to a water treatment system (Figure 7) rior to being discharged directly back into Wildcat Creek. The water will be subjected to ubcontractor determined filtration prior to granular activated carbon (GAC) vessels. The GAC essels may require backwashing if they become fouled with biological or other material. A ortion of the effluent from the GAC vessels will be stored as a non-potable water source for lant use and backwash cycles.

Sediment Requiring Removal

ediment and creek bank soil in Wildcat and Kokomo Creeks will be stabilized in situ (if ecessary) and dredged or excavated from the areas shown on Figure 3 and Drawings Nos. -2 though C-9. The estimated sediment volume to be removed from these reaches is ,850 yd^3.

Construction Details, Including Design and Construction Technical Factors

Vendor information demonstrating the uses of the amphibious dredge system is included in Appendix C. The amphibious hydraulic dredge allows the removal of sediments without the installation of cofferdams or diversion of the creeks.

An amphibious dredge will be used to remove the sediment and conventional earthmoving equipment will be used to remove the sediment any creek bank soils identified for removal. Once the characteristics of the material are deemed suitable, as based on Resource Conservation and Recovery Act (RCRA) liquid restriction requirements and compressive strength testing, the material will be transported to an offsite disposal facility.

Performance Standards

The performance standard for the creek sediment removal is the removal of all easily accessible sediment within the targeted areas to achieve a SWAC that is less than the remedial goals listed in Table 1.

The performance standards for the carriage water may consist of discharge limits for the following:

- Total suspended solids (TSS)
- PCBs
- VOCs
- PAHs
- Metals

Site specific limits for constituents of concern (COCs) will be negotiated.

Closure Verification

After the soil/sediment has been removed from a target area, soil samples will be collected from the same locations used in the preconstruction investigation. The closure verification samples will be collected consistently from the same interval (i.e., 0 to 6 inches) representing the surface of the remaining sediment. These analytical results will then be used to calculate the SWAC and determine the number of verification samples required to achieve closure. The approach used to calculate the post-remediation SWAC will only include these surface samples and **not** a location average. If there are areas where the sediment has been removed such that a sample cannot be collected because of insufficient thickness, these areas will not be included in the calculation.

Closure verification sampling based on methodologies used by the State of Indiana[9] will be conducted following sediment removal in specified areas. Systematic sampling procedures will be used in each area. The sediment or soil will be sampled at regular intervals throughout the target area and the SWAC for each creek reach will be recalculated to determine whether remedial goals have been obtained or whether additional sediment or soil should be removed. The number of samples will be determined based on the Risk Integrated System of Closure (RISC) Technical Guide, Table 6-2.

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[9] Indiana Department of Environmental Management. *Risk Integrated System of Closure (R.I.S.C.) User's Guidance.* February 15, 2001.

amples will be analyzed for either PCBs or PAHs (or both, depending on which onstituents exceed the remediation goals prior to excavation in each area) by a JSEPA-supplied mobile laboratory. Additional sediment and soil removal will be erformed if the recalculated SWAC exceeds the remedial goal. If the recalculated SWAC narginally exceeds the remedial goal, additional sediment or soil samples will be analyzed nd the SWAC will be recalculated. When the SWAC exceeds the remedial goal, the sample esults will be evaluated to determine where additional sediment or soil should be removed. he area of removal will be resampled and the SWAC recalculated. Removal activities shall e deemed complete when the SWAC is less than the remediation goal.

Creek Restoration

Description of Creek Restoration

ollowing the sediment removal within each target area, impacted stream reaches will be estored to stabilized streambanks using bioengineering techniques. The streambanks will e restored as soon as it is practical to do so once the sediments have been removed to ninimize the duration of streambank vulnerability to erosion and within the same onstruction season. Material may be added to the bottom of the stream bed to create rocky ones or riffles.

Examples of preferred stabilization and restoration techniques include root wads, J-hook ane, log-vane, and rock/log weirs. Rip-rap is a useful armoring tool used to stabilize some ypes of channels, but it does not provide diverse habitat and it is not aesthetically pleasing. f rip-rap is required, it will be incorporated with other stabilization techniques to ensure a atural-looking channel that is hydraulically and ecologically functional.

To the extent practical, restoration of impacted stream reaches will be conducted using ioengineering techniques, rather than merely rip-rap, to restore the natural functions of the tream and the floodplain (Figure 8). Bioengineering can be defined as a method of ntegrating living woody and herbaceous materials with organic and inorganic materials e.g., soil, biodegradable fiber schines, and erosion control fabric, rock, wood, steel stakes, wire, and twine) to increase the stability of a stream bed and bank. The objective of ioengineering is to develop a dense matrix of roots that hold soil together and reduce rosion and streambank failure. The above-ground vegetation also acts as a buffer against he abrasive effect of transported materials and increases the resistance to flow, which educes flow velocities and allows sediment deposition due to low shear stress near the ank. Riparian vegetation traps sediments and nutrients from surface runoff and prevents hem from entering the aquatic ecosystem. Riparian vegetation also shades the stream to educe water temperatures and provides wildlife refuge. The streambank vegetation can lso supply detritus as food for aquatic organisms.

Areas Requiring Creek Restoration

The extent of streambank stabilization will be controlled by the locations and extent of the ontaminated sediment removal. Figure 3 and Drawings C-2 through C-9 show the ediment removal locations within Wildcat and Kokomo Creeks.

In addition to the locations shown, additional streambank upstream and downstream of the sediment removal locations may require restoration measures due to existing instability or disruption during construction/sediment removal. Design streambank stabilization locations will be determined during a creek restoration field assessment with final stabilization locations being influenced by sampling verification during construction.

Treatment Details, Including Design and Construction Technical Factors

Restoration activities will immediately follow removal activities because large amounts of materials and equipment will be required during the streambank stabilization.

Example Cross Sections

The draft design drawings contain plan and section drawings of bioengineering techniques that will best resist erosive stream flows and provide habitat for native species. Drawing C-10 lists the typical sections to be applied and Drawings D-1 through D-6 provide the typical streambank reconstruction details and planting schedule. This technique includes the use of native vegetation over the entire bank with a root wad and boulder toe protection used to protect the streambank from erosive flows and during high flow events.

Performance Standards

Maintenance will continue for a period of 1 year, or until all restoration has been accepted. Any areas requiring rework during that period will carry a 1-year maintenance extension. After all restoration has been accepted, performance will be evaluated by visual observation on an annual basis for 5 years. During the 5-year site review, the creek restoration performance will be evaluated and the inspection frequency modified, if necessary. Monitoring most commonly occurs by making visits to the site on foot; however, it is recommended that other means of reviewing the site be employed periodically. Traveling the stream by boat or aerial viewing of the site may be warranted.

5-Year Site Reviews

Ongoing sampling of creek surface water and sediment is not included in the ROD because all of the contaminated sediment above criteria will be removed. As a result, the 5-year review will evaluate data collected under the monitoring programs for the Main Plant, the Lagoon Area, and the Groundwater OUs. The intent of the review is to determine whether there is a potential for the creek sediments to have become recontaminated through erosion or from discharges of contaminated groundwater. If there is a substantial potential for recontamination, surface water and sediment monitoring will be considered. The 5-year site review will also look at the creek restoration performance and the inspection frequency modified, if necessary.

Compliance with ARARs

The CSSS ROD summarized the following federal and state ARARs in Appendix G:

- RCRA, including the Hazardous and Solid Waste Act Amendments of 1984 (HSWA)
- The Toxic Substances Control Act (TSCA)
- The Clean Water Act (CWA) and all subsequent Amendments
- The Safe Drinking Water Act
- The Clean Air Act (CAA)
- The Protection of Wetlands/Floodplains Management Executive Order
- The Hazardous Materials Transportation Act
- Indiana Water Quality Standards (IAC Title 327)
- Indiana Solid Waste Management Board Rules (IAC Title 329)
- Indiana Air Pollution Control Regulations (IAC Title 326)
- CERCLA, including the Superfund Amendments and Reauthorization Act of 1986 and all subsequent amendments

Many of these laws and regulations were discussed within the *Lagoon (OU2) Revised Design Criteria Report*, dated January 2002 and the *Main Plant Design Criteria Report*, dated June 2002. Laws and regulations with unique aspects related to the design of the creek sediment removal are discussed below. Table 3 presents the specific requirements, the design components that address each requirement, and a discussion regarding the necessity of an ARAR waiver.

The Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA requires the selected remedy to meet the substantive requirements of all environmental rules and regulations that are ARARs unless a specific waiver of the requirement is granted. A waiver of ARARs may be requested (per the NCP 300.430[f][1][ii][C]) based on any one of six circumstances. It is not anticipated that any ARAR waivers under CERCLA will be necessary.

The Resource Conservation and Recovery Act

The applicability or relevancy and appropriateness of RCRA is discussed first by summarizing the classification of wastes present in the creek sediments. This discussion is then followed by a brief discussion of applicable Land Disposal Restrictions (LDRs).

Classification of Wastes

The sediment or soil to be removed and disposed of offsite should be classified according to RCRA status to determine whether RCRA requirements are ARARs.

The first part of the RCRA applicability determination requires analyzing whether the contaminated sediment or soil is a RCRA hazardous waste. The mixture rule within RCRA states that mixtures of hazardous waste and solid waste are to be considered hazardous waste. However, the mixture rule cannot apply to contaminated media such as soil and sediment, because the media have not been "discarded," and are, therefore, not solid waste. To clarify how the mixture rule applies to contaminated environmental media, USEPA developed a "contained-in" policy, which specifies that environmental media that "contain" hazardous waste must be managed as hazardous waste. This policy applies to contaminated environmental media that exhibit a characteristic of a hazardous waste, such as toxicity, and to environmental media contaminated with a listed hazardous waste, such as F-listed solvents. To determine whether a contaminated environmental medium at a CERCLA site is a listed hazardous waste, the origin of the waste that contaminated the medium must be known. If the origin of the waste is not known or there is no documentation on the waste, the medium can be assumed not to contain a listed hazardous waste. The specific origin and potential hazardous waste classification of the wastes that are the source of the creek sediment or bank soil contamination are not known. As a result, these are assumed not to contain a listed waste.

To determine whether a contaminated environmental medium at a CERCLA site is a characteristic waste, the medium can be tested, or professional judgment can be used to determine whether testing is necessary. Under RCRA, a waste generator is not required to test its waste, but the generator can use knowledge of the waste constituents to make a characteristic determination. Arsenic is the only contaminant of concern in the sediment that could cause the sediment to be a characteristic waste. It is not present, however, in concentrations high enough to cause an exceedance of the toxicity characteristic leaching procedure (TCLP) limit of 5 milligram(s) per liter (mg/L). As a result, the sediment does not have to be managed as a hazardous waste.

Land Disposal Restrictions

Land Disposal Restrictions (LDRs) may need to be considered TBCs, particularly because of the ROD inclusion of the potential need for treatment of some of the soils and sediments. However, for the creek sediments and bank soils, LDRs are not considered TBCs because the sediments do not contain a listed hazardous waste and are not a characteristic hazardous waste.

Toxic Substances Control Act

TSCA regulates the remediation of soils contaminated with PCBs under 40 CFR 761.61 (a), Self-implementing Onsite Cleanup and Disposal of PCB Remediation Waste. However, this section specifically excludes remediation of sediment from the self-implementing rules. As a result, the TSCA self-implementing rules are not ARARs for the creek sediment remediation. Contaminated sediments are addressed under 40 CFR 761.61(b) (3) Performance-based Cleanup. This section specifically requires sediments dredged or excavated from waters of the United States to be managed in accordance with a permit

issued under section 404 of the Clean Water Act, or the equivalent of such a permit. While a permit is not required for CERCLA response actions, consultations with the U.S. Army Corps of Engineers (USACE), the permitting agency, will be held to determine the requirements that will apply to the creek sediment dredging and excavation.

TSCA also requires soil contaminated with PCBs at concentrations of 50 mg/kg or greater to be disposed at either a hazardous waste landfill permitted under RCRA or at a chemical waste landfill permitted under TSCA.

TSCA storage requirements (40 CFR 761.65) for PCB materials with PCB concentrations of 50 mg/kg or greater prior to disposal are considered ARARs and are discussed in Table 3.

Clean Air Act

Requirements of the CAA are potentially applicable to remedial actions that result in air emissions, such as excavation activities. Mitigative measures to reduce air emissions during excavation will be adhered to as part of the construction plan.

Clean Water Act

The Clean Water Act provides regulations for discharges of pollutants into the waters of the United States. It required USEPA to set water quality standards for all contaminants in surface waters and required that permits be obtained for discharge of pollutants from a point source into navigable waters.

Regulations promulgated under the authority of the CWA require a permit to be obtained for dredging or excavation of sediments in navigable water such as Wildcat and Kokomo Creeks. While permits are not required for CERCLA response actions, the substantive requirements that such a permit would contain must be met. As a result, consultations with the USACE, the permitting agency, will be held to determine the requirements that will apply to the dredging and excavation of creek sediment. Typical requirements include actions to minimize resuspension of sediments and to control erosion during dredging or excavation.

Indiana Air Pollution Control Regulations (IAC Title 326)

Indiana air pollution control regulations were developed pursuant to the Federal CAA. The regulations contain specific emission levels and requirements for monitoring emissions. They also contain requirements for specific types of operations (such as burning) and for certain types of industry, as well as provide specific emissions standards for hazardous air pollutants.

Requirements of IAC Title 326 are potentially applicable to remedial actions that result in air emissions, such as excavation and treatment activities. Mitigative measures to reduce air emissions during excavation will be adhered to as part of the construction plan.

ndiana Water Pollution Control Board Rules (IAC Title 327)

ndiana Water Pollution Control Board rules specify requirements for surface water and roundwater quality, and include pretreatment requirements for discharges to POTWs and urface water (NPDES program). The rules generally parallel those set forth in the Clean Vater Act. Although a NPDES permit is not required for CERCLA actions, consultations vill be held with the state of Indiana to determine site-specific NPDES discharge treatment equirements for waters resulting from the dewatering of sediment prior to disposal. If ieeded, treatment of the water will be included prior to discharge.

ndiana Solid Waste Management Board Rules (IAC Title 329)

ndiana Solid Waste Management Board Rules specify requirements that apply to solid vaste and hazardous waste facilities. These include Solid Waste Management Requirements, Hazardous Waste Management Permit Program and Related Hazardous Waste Management Requirements, and PCB Waste Management Requirements. The solid vaste regulations include design and disposal regulations, as well as monitoring equirements and standards for groundwater protection applicable to solid waste land lisposal facilities. The hazardous waste regulations were developed pursuant to the equirements of RCRA, and they pertain to generators and transporters of hazardous waste ind owners or operators of hazardous waste facilities. PCB waste management equirements were developed based on the requirements of TSCA.

n general, most of these requirements mirror the federal requirements discussed above. The nain requirements that are identical to the federal requirements are as follows:

- RCRA LDRs—329 IAC 3.1-12-1
- TSCA PCB Remediation Wastes—329 IAC 4

Minimizing Environmental and Public Impacts

Environmental and public health and welfare impacts will be minimized through:

- Site access control
- Soil erosion control
- Air pollution control

Site Access Control

Access control to the creeks during remediation is necessary to prevent exposure of respassers to contaminated sediment and soil during remediation. Access will be controlled by the fencing currently in place and by installing additional fencing around work areas.

Access to the dewatering pad will be controlled by the fencing currently in place, and during working hours, the gate will be unlocked but kept in the closed position. A sign will be posted at the entrance to notify visitors that they are required to sign in at the office railer. The gate area will be monitored by personnel in the office trailer area adjacent to the gate. The gate will be locked after work hours.

Soil Erosion Control

Silt fencing or hay bales will be placed along the banks of Wildcat and Kokomo Creeks following dredging and excavation until the area has been regraded and revegetated. Construction of embankments may also be necessary to control erosion during remediation.

Groundwater Pollution Control

All groundwater associated with the CSSS will be addressed under a separate RD/RA contract.

Air Pollution Control

Earthwork during remediation may generate dust. Impacts on workers will be minimized through implementation of a worker health and safety plan specifying a dust monitor. This instrument will be used to monitor the air along the work area boundaries to determine whether excessive emissions are occurring to offsite areas. Dust suppression measures shall be implemented when the concentration of dust in the air, as measured at the property boundary, is greater than 1.0 milligram(s) per cubic meter (mg/m^3). Dust suppression shall be accomplished by wetting the area with water.

Compliance with Permitting Requirements

CERCLA response actions do not need to comply with the administrative requirements, such as permitting, of applicable or relevant and appropriate environmental laws and regulations. Substantive requirements, however, must be met. Permits applicable to the RA for Wildcat and Kokomo Creeks include, but may not be limited to, the following:

- Notification Requirement—Adjoining land owners or occupants will be notified by IDEM.
- Notice of Intent—To be completed by CH2M HILL and IDEM.
- Soil Erosion Control Plan—To be submitted by the subcontractor to CH2M HILL for approval. After the plan has been approved by CH2M HILL, it will be forwarded to IDEM, who will submit the plan to the Howard County Soil and Water Conservation District.
- USACE 404 Permit and IDEM 401 Water Quality Certificate—To be completed by IDEM.
- Flood Control Act Permit—To be completed by IDEM.

In addition, the subcontractor shall deliver all necessary preconstruction submittals to CH2M HILL for approval prior to mobilization.

Construction Schedule

A draft construction schedule follows this page.